Patent
Attorney's Docket No. 026125-081

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	
	)	
Sven MATTISSON	)	Group Art Unit: Unassigned
	)	
Application No.: Unassigned	)	Examiner: Unassigned
	)	
Filed: December 21, 2001	)	
	)	
For: Sound-Based Proximity Detector	)	

TD22499US01

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Before examination, please amend this application as follows.

IN THE SPECIFICATION

Page 1, line 1, please delete entirely;

line 2, delete "TITLE";

line 5, please replace the section heading with --Field of the Invention--; and

line 12, please delete entirely.

Page 2, please replace the paragraph beginning at line 28, with the following:

--U.S. Patent No. 4,490,584 discloses a telephone system having a remote microphone and an associated transmitter, and a network located receiver for signals outgoing over the telephone network and including a local loudspeaker to broadcast signals incoming over the telephone network, wherein the loudspeaker audible level is controlled to vary with the level of the received microphone signal. The level of the loudspeaker signal is increased when the received microphone signal increases, and vice versa, allowing the user to control the loudspeaker level

by adjusting mouth-to-microphone distance or speech loudness. This solution to control the loudspeaker level is, however, not applicable or useful in a mobile phone in order to provide an automatic adjustment of the sound level in the loudspeaker. A high speech loudness or short mouth-to-microphone distance increases the loudspeaker audible level, which can impair the hearing of a person using such a phone. Another reason for not using this proposed solution is that the loudspeaker level only responds to the received microphone signal.--

Page 3, line 22, please replace the section heading with --Summary--.

Page 5, line 4, please replace the section heading with --Detailed Description--.

Page 10, line 1, please replace the section heading with --What is claimed is:--.

Please replace the **ABSTRACT** with the following:

--A proximity detector for use in a mobile telephone having at least a microphone and a loudspeaker operatively connected to a signal processor is presented. The proximity detector includes data processing and control modules having a module for controlling the signal processor for activating the loudspeaker to reproduce an acoustic control signal. A correlator correlates a control signal received directly by the microphone and a control signal being reflected from a user of the telephone and then received by the microphone to determine the distance between the telephone and the user. A signal level controller controls the signal processor to vary the signal level of an audible signal reproduced by the loudspeaker proportionally to the determined distance between the telephone and the user.--

IN THE CLAIMS

Please **CANCEL** claims 1-12.

Please **ADD** new claims 13-24 as follows:

13. (New) A proximity detector for use in a mobile telephone having at least a microphone and a loudspeaker operatively connected to signal processing means, the proximity detector comprising:

data processing and control means including means for controlling the signal processing means for activating the loudspeaker to reproduce an acoustic control signal;

correlating means for correlating a control signal received directly by the microphone and a control signal reflected from a user of the telephone and then received by the microphone for determining a distance between the telephone and the user; and

signal level control means for controlling the signal processing means for varying the signal level of an audible signal reproduced by the loudspeaker proportionally to the determined distance.

14. (New) The proximity detector according to claim 13, wherein the data processing and control means include:

attenuation determining means for determining the attenuation of the control signal received directly by the microphone; and

means for varying the signal level of an audible signal reproduced by the loudspeaker inversely proportionally to the attenuation.

15. (New) The proximity detector according to claim 13, wherein the correlating means include means for comparing the signal level of the directly received control signal with the signal level of the reflected control signal for determining the distance between the telephone and the user.

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16. (New) The proximity detector according to claim 13, wherein the correlating means include means for comparing a signal delay of the directly received control signal with a signal delay of the reflected control signal for determining the distance between the telephone and the user.

17. (New) The proximity detector according to claim 13, wherein the control signal is an ultrasonic signal.

18. (New) The proximity detector according to claim 13, wherein the control signal is an audible signal.

19. (New) The proximity detector according to claim 13, wherein the control signal is a ring or a voice signal.

20. (New) A proximity detector for use in a mobile telephone having at least a microphone and a loudspeaker operatively connected to signal processing means, the proximity detector comprising:

data processing and control means including means for controlling the signal processing means for activating the loudspeaker to reproduce an acoustic control signal;

attenuation determining means for determining the attenuation of a control signal received directly by the microphone; and

means for varying the signal level of an audible signal reproduced by the loudspeaker inversely proportionally to the attenuation.

21. (New) A mobile telephone apparatus, comprising:

a microphone;

a loudspeaker;

signal processing means operatively coupled to the loudspeaker; and

a proximity detector including

data processing and control means including means for controlling the signal processing means for activating the loudspeaker to reproduce an acoustic control signal;

correlating means for correlating a control signal received directly by the microphone and the control signal reflected from a user of the telephone and then received by the microphone for determining a distance between the telephone and the user; and

signal level control means for controlling the signal processing means for varying the signal level of an audible signal reproduced by the loudspeaker proportionally to the determined distance.

22. (New) A method for sound-based proximity detection in a mobile telephone having at least a microphone and a loudspeaker operatively connected to signal processing means, the method comprising the steps of:

controlling the signal-processing means to activate the loudspeaker to reproduce an acoustic control signal;

receiving first and second control signals from the microphone corresponding to an acoustic control signal received directly from the loudspeaker and an acoustic control signal reflected from a user of the telephone and then received, respectively;

correlating the first and second control signals to determine the distance between the telephone and the user; and

generating a data control signal for the signal processing means to activate the loudspeaker for reproducing audible signals having a signal level that is proportional to the determined distance between the telephone and the user.

23. (New) The method according to claim 22, further comprising the steps of:

determining the attenuation of the control signal received directly from the

loudspeaker; and

varying the signal level of an audible signal reproduced by the loudspeaker inversely proportionally to the attenuation.

24. (New) A method for sound-based proximity detection in a mobile telephone having at least a microphone and a loudspeaker operatively connected to signal processing means, the method comprising the steps of:

controlling the signal processing means to activate the loudspeaker to reproduce an acoustic control signal;

determining the attenuation of a control signal transmitted directly to the microphone from the loudspeaker; and

controlling the signal processing means to vary the signal level of an audible signal reproduced by the loudspeaker inversely proportionally to the attenuation.

REMARKS

The specification has been amended and the claims and Abstract have been replaced to place the application in better form for examination. Applicant notes that the claims in the original application were improperly numbered, resulting in two claims having the claim number "11". By cancelling claims 1-12, Applicant intends to cancel all of the original claims, and replace those claims with new claims 13-24. Favorable consideration is respectfully solicited.

Respectfully submitted,

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I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
J Snead
(Type or printed name of person mailing paper or fee)
_____
(Signature of person mailing paper or fee)

Attachment to Preliminary Amendment dated December 21, 2001

Marked Up Copy of Amendments
to the Specification Section Headings

Page 1, line 1, delete
[Applicant: Telefonaktiebolaget LM Ericsson]

Page 1, line 2, delete
[Title]

Page 1, the section heading at line 5
[Field of the Invention] --Background--

Page 1, the section heading at line 12
[Background of the Invention]

Page 2, the paragraph beginning at line 28,

[US-A- 4 490 584] U.S. Patent No. 4,490,584 discloses a telephone system having a remote microphone and an associated transmitter, and a network located receiver for signals outgoing over the telephone network and including a local loudspeaker to broadcast signals incoming over the telephone network, wherein the loudspeaker audible level is controlled to vary with the level of the received microphone signal. The level of the loudspeaker signal is increased when the received microphone signal increases, and vice versa, allowing the user to control the loudspeaker level by adjusting mouth-to-microphone distance or speech loudness. This solution to control the loudspeaker level is, however, not applicable or useful in a mobile phone in order to provide an automatic adjustment of the sound level in the loudspeaker. A high speech loudness or short mouth-to-microphone distance increases the loudspeaker audible level, which can impair the hearing of a person using such a phone. Another reason for not using this proposed solution is that the loudspeaker level only responds to the received microphone signal.

Page 3, the section heading at line 22
[Summary of the Invention] --Summary--

Page 5, the section heading at line 4
[Detailed description of the Invention] --Detailed Description--

Page 10, the section heading at line 1
[Claims] --What is claimed is:--

Attachment to Preliminary Amendment dated December 21, 2001

Marked Up Copy of Amendments
to the Abstract

A proximity detector for use in a mobile telephone [apparatus, wherein the phone has] having at least a microphone [(1)] and a loudspeaker [(5)] operatively connected to a signal [processing means (2,3,4)] processor is presented. The proximity detector [comprises] includes data processing and control [means (6) including means] modules having a module for controlling the signal [processing means (3,4) in order to activate] processor for activating the loudspeaker [for reproducing] to reproduce an acoustic control signal[, correlating means for correlating the] . A correlator correlates a control signal received directly [(D_{direct})] by the microphone [(1)] and [the] a control signal being reflected [(D_1+D_2)] from a user [(13)] of the [phone (9)] telephone and then received by the microphone [(1) for determining] to determine the distance [($D_1 \approx D_2$)] between the [phone (9)] telephone and the user [(13), and] . A signal level [control means for controlling] controller controls the signal [processing means (3,4) in order to varying] processor to vary the signal level of an audible signal reproduced by the loudspeaker [(5)] proportionally to the determined distance [($D_1 \approx D_2$)] between the [phone (9)] telephone and the user [(13)].

[To be published with FIG 2A]